

REMARKS

Claims 1-4 and 9-19 remain pending in the application. Favorable reconsideration is respectfully requested in view of the following remarks.

Claims 1-4, 9-19 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Cansever (US Patent No. 6,678,252) in view of Morris et al. (US Pub. No. 2003/0149794 A1 -- henceforth "Morris"). This rejection is respectfully traversed.

The Office rightly acknowledges (e.g., in the Office Action text spanning pages 3 and 4) that Cansever fails to disclose establishing a route between the source node and the destination node by forming and/or reforming one or more subnetworks in response to determining that said request for route discovery between the source node and the destination node over existing subnetworks fails. The Office relies on Morris as making up for this deficiency. This reliance is unfounded for at least the following reasons.

The invention relates to establishing a route from a source to a destination in an ad-hoc network telecommunications system. In a system that, for example, utilizes Bluetooth® technology, establishing a route from a source to a destination typically involves the source node broadcasting a REQUEST message which requests a route to a stated destination. All nodes that are within range receive this REQUEST message. A node that receives the REQUEST message but is neither the destination node nor a node with a valid route to the destination node, will rebroadcast the REQUEST message to its neighbors. When the destination node, or a node with a valid route to the destination node receives the REQUEST message, it limits network flooding by not rebroadcasting the REQUEST message, and it sends a Unicast REPLY message back to the source node.

As explained in the Background section of the instant application, typically, the source node uses the first reply message received, and it only requests a new route when the actual route breaks.

The Bluetooth specification has the INQUIRY and PAGE procedure to establish piconets but, at least at the time of the invention, failed to describe how these can be used to form efficient scatternets. Moreover, solutions at the time of the invention did not provide a procedure for nodes that have packets to send to a destination, wherein these nodes are not members of any piconet.

Embodiments defined by, for example, independent claim 1 address these issues by including various means that broadcast a route discovery request message for a route between the source node and the destination node over one or more existing subnetworks; determine

whether the request for route discovery between the source node and the destination node over existing subnetworks fails; and determine a route between the source node and the destination node by forming and/or reforming one or more subnetworks in response to determining that the request for route discovery between the source node and the destination node over existing subnetworks fails.

Independent claims 9 and 12 each define similar features.

Applicants' variously claimed embodiments are believed to be patentably distinguishable over any combination of Cansever with Morris at least because neither of these documents discloses or suggests "means for determining a route between the source node and the destination node by forming and/or reforming one or more subnetworks in response to determining that said request for route discovery between the source node and the destination node over existing subnetworks fails". (Emphasis added.)

As mentioned earlier, the Office rightly acknowledges that Cansever fails to disclose establishing a route between the source node and the destination node by forming and/or reforming one or more subnetworks in response to determining that the request for route discovery between the source node and the destination node over existing subnetworks failed. What the Office does not state, but what Cansever expressly teaches is that in such cases, the source node merely re-issues the Route Request packet, possibly with a different QoS request. (See, e.g., Cansever at column 7, lines 13-40.) Thus, another attempt is made to establish a path through the existing network without any attempt being made to form or reform subnetworks to create the possibility of a new path between the source and destination nodes.

The Office relies on Morris as making up for this deficiency. In particular, the Office alleges that "Morris et al. teach the source node comprising means for determining a route between the source node and the destination node by forming and/or reforming one or more subnetworks in response to determining that said request for route discovery between the source node and the destination node over existing subnetworks fails (see page 4, paragraph [0029] wherein the wireless node issuing message/advertisement to initiate an establishment of a piconet is mentioned)."

It is respectfully asserted that the Office has made technical errors in construing Morris, and that this has led to erroneous conclusions about the patentability of Applicants' claims. Morris' text is not concerned with determining a route between a source node and a destination node in an existing network, and therefore does not teach sending a request for

route discovery between a source node and a destination node over existing subnetworks. Without this, there is no concept in Morris of detecting whether any such route discovery attempt fails, and in response to such failure forming and/or reforming one or more subnetworks.

What Morris is instead concerned with is the ability of an internetworking node (i.e., a node that bridges two or more wireless networks -- see Morris at, e.g., paragraph 0017) to advertise, in a second wireless network, the services that are available in a first wireless network. (See, e.g., Morris' Abstract.) The advertisement is not directed to any particular destination node. To enable the internetworking node to fulfill its function, Morris teaches, in paragraph 0029, the internetworking node trying to establish itself in the second wireless network. First, it tries to detect whether any nodes in the second wireless network are transmitting internetwork management broadcasts or advertisements (see, e.g., Morris' blocks 174 and 178 in Figure 3). If either of these is detected, then the internetworking node interacts with these other nodes to establish itself either as a slave or a master, depending on circumstances. (See, e.g., blocks 186, 188, 190, 192, and 194 in Figure 3.)

Morris' paragraph 0029 further teaches that "If neither an internet management broadcast nor an advertisement is detected (steps 174 and 178), the wireless node issues an advertisement in order to initiate establishment of a piconet in the manner described above (step 180)." If the internetworking node ends up being a master node, then it will merely periodically transmit internetwork management broadcasts (see, e.g., Morris' block 184). However, if the internetworking node ends up being a slave node in the second wireless network, then the internetworking node will merely transmit advertisements periodically (see, e.g., blocks 192 and 194 in Figure 3, and paragraph 0030 in Morris).

In either case, it is evident that Morris does not teach route discovery between any particular source node and any particular destination node in an existing network. Without performing route discovery, the internetworking node is not capable of detecting any route discovery failure and then responding to such detection by forming and/or reforming a subnetwork.

It is evident that the Office's rejection is based on a faulty reading of Morris. Considering what Morris actually discloses, Applicants respectfully contend that there would not have been any rational basis to motivate or suggest combining the teachings of Cansever with those of Morris to arrive at the various embodiments defined by Applicants' claims. It is believed that combining the teachings of Morris with those of Cansever would at best result

in Morris' network establishment techniques being applied to initially establish the existing network of Cansever. Having established an existing network, Cansever's techniques (e.g. as taught in Cansever at column 7, lines 13-40) would then be applied in a routing algorithm that involves re-issuing a Route Request in the event that a source node does not receive a Reply packet within a specified period of time. Nowhere does either of these references teach or suggest forming and/or reforming subnetworks in response to a failure of a route discovery request through an existing network, as required by Applicants' claims.

The Office now responds to Applicants' arguments by citing page 4, paragraph [0029] of Morris, and arguing that "Morris clearly teaches that a wireless node (i.e. a source node) initially listens for the presence of advertisements from other wireless nodes (i.e. destination nodes) in the existing piconet is mentioned which is equivalent to requesting for route discovery between the source node and the destination node over the existing network, and also is mentioned that if the wireless nodes does not detect the advertisement (see Fig. 3, block 178), then wireless node issues initial advertisement to establish new piconet (see Fig. 3, block 180) which is equivalent to determining a route between the source node and the destination node by forming and/or reforming one or more subnetworks in response to determining that said request for route discovery between the source node and the destination node over existing subnetworks fails." (Emphasis added.)

Applicants respectfully assert that the Office's analysis is technically flawed for at least the following reasons:

- "Listening for the presence of advertisements" cannot reasonably be considered equivalent to "requesting for route discovery between the source node" at least because "listening" does not initiate or cause route discovery to take place, nor does it involve identifying particular source and destination nodes.
- A wireless node issuing an initial advertisement to establish a new piconet cannot reasonably be considered equivalent to determining a route between the source node and the destination node ..." at least because the advertisement does not identify particular source and destination nodes.

Because the Office's arguments are believed to be unreasonable from a technical point of view, Applicants stand by their original arguments, and believe that independent claims 1, 9, and 12, as well as their respective dependent claims 2-4, 10-11, and 13-19, define subject matter that is neither disclosed nor suggested by any combination of Cansever with

Morris. Accordingly, it is respectfully requested that the rejection of claims 1-4, and 9-19 under 35 U.S.C. §103(a) be withdrawn.

The application is believed to be in condition for allowance. Prompt notice of same is respectfully requested.

Respectfully submitted,
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